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Factoring

Problems:

1) Factor the expression $x^2 - xm,$

2) Factor the expression $k^2 + z^2$

3) Factor the expression $tx^2 - t$

4) Factor the expression $x^2 - m^2$

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Answers:

1) Factor the expression $x^2 - xm$,

1) Pull out the common factor x

$$\begin{aligned}
 x^2 - xm &= x(x - m) \\
 &= x(x+m)(x-m)
 \end{aligned}$$

2) Factor the expression $k^2 + z^2$

2) Use the formula $a^2 + b^2 = (a + bi)(a - bi)$ and get

$$k^2 + z^2 = (k + iz)(k - iz)$$

3) Factor the expression $tx^2 - t$

3) Pull out the common factor t

$$\begin{aligned}
 tx^2 - t &= t(x^2 - 1) \\
 &= t(x+1)(x-1) \\
 &= t(x+1)(x+1)(x-1)
 \end{aligned}$$

4) Factor the expression $x^2 - m^2$,

4) Use the formula $a^2 - b^2 = (a + b)(a - b)$

$$x^2 - m^2 = (x+m)(x-m)$$